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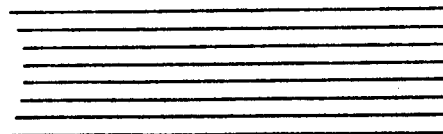
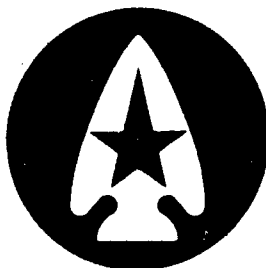
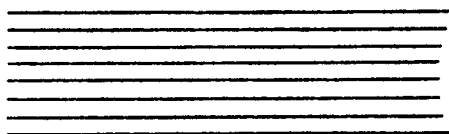
UNITED STATES ARMY COMBAT DEVELOPMENTS COMMAND

SYSTEMS ANALYSIS
TEST AND EVALUATION
(SATE)

A REPORT
OF A MANAGEMENT SURVEY CONDUCTED BY
THE SATE STUDY GROUP

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VOLUME I

BASIC REPORT

13 March 1972

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CDCDGC

DEPARTMENT OF THE ARMY

HEADQUARTERS

UNITED STATES ARMY COMBAT DEVELOPMENTS COMMAND

FORT BELVOIR, VIRGINIA 22060

14 March 1972

SUBJECT: A Report of a Management Survey: Systems Analysis Test and Evaluation (SATE)

SEE DISTRIBUTION

1. On 16 December 1971 the CG USACDC directed that a study be conducted to determine a CDC organization for OTE and Systems Analysis. The SATE Special Study Group was formed under the direction of the undersigned on 23 December 1971. The Draft SATE Study Report was dispatched for review and comment to CDEC and CDC Groups on 31 January 1972. CDEC/Group comments and recommendations were incorporated into the final report. The final report also considered the implications of the COA Priority #4 Study Report on Operational Testing and Evaluation.
2. The CG USACDC was briefed on the SATE recommendations and command comments on 10 March 1972. The CG reviewed and approved for implementation the recommendations of the SATE Study Report as indicated at Inclosure 1. Recommendations that were deferred by the CG are also indicated at Inclosure 1. USACDC staff offices/commands indicated in the inclosure will take necessary actions to implement the approved recommendations by the suspense dates shown.
3. Volume I of the SATE Study Report is attached as Inclosure 2. Addressees will give the attached report the widest possible circulation. Volume II of the SATE Study Report will be forwarded under separate cover by 20 March 1972.
4. The Chief of Staff, USACDC is assigned overall responsibility for implementation of the SATE Study recommendations as approved by the CG.

FOR THE COMMANDER:

2 Incls
as

Curtis Chapman
CURTIS CHAPMAN
Major General, US Army
Deputy Commanding General

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APPROVAL/DEFERRAL OF SATE STUDY REPORT RECOMMENDATIONS

INCL 1

Para	Recommendation	Action		Responsibility		Completion Date
		Approved	Deferred	HQ Staff	Command	
2.4.a.	The basic DA life cycle be updated to include the current management and decision-making process for development of combat systems, and forwarded to DA as the initial draft of the new DA life cycle.	X		DCSMAR COMPT		31 Mar 72
2.4.b.	A simplified life cycle of the CD process be developed for instructional use within CDC.	X		DCSMAR COMPT		17 Apr 72
2.4.c.	A detailed life cycle of the CD process be developed to show the dynamics of the CD process in the current CDC concept of operations.	X		DCSMAR COMPT		1 Jun 72
2.4.d.	Systems engineering/systems integration be incorporated into the CD process.	X		DCSMAR COMPT	SAG	1 Jun 72
3.4.a.	Current concept of operations remain in effect.	X		DCSOPS	All	---
3.4.b.	Reorganization actions be expedited to achieve the medium "lead-horse" configuration.	X		CofS	All	30 Apr 72
3.4.c.	DCSOPS/DCSMAR expedite and guide implementation of the current concept of operations, including reorganization actions, revision of publications, transfer of personnel, educating the command, and provisions of management assistance to the groups.	X		DCSOPS DCSMAR Comp		30 Apr 72
3.4.d.	CDC groups reexamine the existing and proposed HQ reorganization plans with a view toward realignment along major program lines.	X		DCSMAR COMPT	All	30 Jun 72

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APPROVAL/DEFERRAL OF SATE STUDY REPORT RECOMMENDATIONS

Para	Recommendation	Action		Responsibility		Completion Date
		Approved	Deferred	HQ Staff	Command	
3.4.e.	Effort on the experimental command/operation MIS sub-system described in CDC Pamphlet 10-3 be renewed for accomplishment as an FY 73 management goal.	X		DCSOPS DMIS	---	30 Jul 72
3.4.f.	CDOC as a manual management tool be phased out during FY 73 as the new CDC CMIS and the experimental command/operation MIS sub-system are brought into operation.	X		DCSOPS DMIS	---	31 Dec 72
4.4.a.	Current concept of the centralized SAG be retained.	X		DCSOPS	SAG	---
4.4.b.	Command emphasis be applied to the proper use of OR/SA military personnel within CDC.	X		DCSOPS	All	31 Mar 72
4.4.c.	OR/SA be used in a systematic manner for all combat developments IAW the life cycle discussed in Chapter 2 and command priorities.	X		DCSMAR COMPT	SAG	1 Jun 72
4.4.d.	Actions be stepped up to fill the OR/SA vacancies in the CDC TDA.	X		DCSMAR Pers Dir	All	30 Apr 72
4.4.e.	That additional T&E OR/SA support functions be assigned to SAG and personnel authorizations be added to the SAG field offices to permit early recruitment to fill vacant spaces.	X		DCSMAR Pers Dir	SAG	30 Apr 72
4.4.f.	That the Leavenworth War Game function be assigned to the SAG field office.		X	Cofs		---
4.4.g.	That new OR/SA T&E support functions be combined with the SAG field office to develop a CDC Evaluation Center at Fort Leavenworth to exploit the new computer, the War Game		X	Cofs		---

APPROVAL/DEFERRAL OF SATE STUDY REPORT RECOMMENDATIONS

Para	Recommendation	Action		Responsibility		Completion Date
		Approved	Deferred	HQ Staff	Command	
4.4.g. (Cont)	facility, and the flexibility of the entire bank of SAG personnel skills.					
4.4.h.	OR/SA assets be redistributed as shown at Figure 4, page 19, Vol I, SATE Study Report	X		DCSMAR Pers Dir	SAG CDEC	30 Apr 72
4.4.i.	Specific spaces including non-OR/SA support be transferred as shown in Annex C, Vol II, SATE Study Report.	X		DCSMAR Pers Dir	SAG CDEC	30 Apr 72
4.4.j.	That CDC initiate a Consolidated Eval Plan (CEP) for each major combat development.	X		DCSOPS	SAG	30 Jun 72
4.4.k.	OPCON status of the Fort Leavenworth SAG Field Office be reviewed at the end of the 1st Qtr, FY 73.	X		DCSOPS	SAG COMS	30 Sep 72
4.4.l.	Consideration be given to the redesignation of the SAG Fort Lee Field Office as the Personnel and Logistics Analysis and Evaluation Center following the evaluation of the results of 4.4.k., above.	X		DCSOPS	SAG PALS	14 Oct 72
5.4.a.	That the current Test and Evaluation Directorate be reduced in size and placed into DCSOPS as a T&E Division with the Test Support cells transferred to CDEC, selected OR/SA spaces transferred to SAG, and the remaining spaces transferred to the groups.	X		DCSMAR T&E Dir Pers Dir	All	30 Apr 72
5.4.b.	That the DA TSRC proceedings be utilized for scheduling and review of all user field test proposals.	X		DA DCSOPS		---

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APPROVAL/DEFERRAL OF SATE STUDY REPORT RECOMMENDATIONS

Para	Recommendation	Action		Responsibility		Completion Date
		Approved	Deferred	HQ Staff	Command	
5.4.c.	That staff responsibility within HQ CDC for the CTP, DST, EST, independent evaluation and user field tests be assigned to the T&E Division and MS Directorate responsibilities be modified accordingly.	X		DCSOPS T&E Dir MS Dir COMPT	---	30 Apr 72
5.4.d.	That each action group establish an identifiable T&E element to coordinate the CTP, OTE, and other user field test activities.	X		DCSOPS	COMSG PALSG CONFORG	15 May 72
5.4.e.	That the T&E Division prepare, on a priority basis, the following documents relating to test and evaluation activities: (1) Joint CDC/AMC (TECOM) memorandum of agreement (MOA) on CDC's involvement in the DST and EST. (2) Joint CDC/CONARC MOA on CDC's Test Support Cells involvement in the ICTT and other user field tests. (3) Single CDC regulation governing T&E policy and responsibilities within CDC (combine CDC Regulations 71-4, 71-7, 71-8, and 71-9). (4) Detailed implementing instructions and procedures to augment the regulation in paragraph (3) above.	X		DCSOPS T&E Dir	---	31 Mar 72
		X		DCSOPS T&E Dir	---	17 Apr 72
		X		DCSOPS T&E Dir	---	17 Apr 72
		X		DCSOPS T&E Dir	---	30 Apr 72
5.4.f.	That action groups insure the HQ CDC and AMC (TECOM) MOA is implemented and supplemented as necessary at agency/board level.	X		DCSOPS	All	1 Jun 72

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Para	Recommendation	Action		Responsibility		Completion Date
		Approved	Deferred	HQ Staff	Command	
5.4.g.	That the action groups be augmented to carry out DST and EST responsibilities.	X		DCSOPS Pers Dir	All	30 Apr 72
5.4.h.	That the SAG field offices be augmented with OR/SA personnel to assist action groups in analysis of T&E requirements and evaluation of test results.	X		DCSMAR Pers Dir	SAG	30 Apr 72
5.4.i.	That Test Support Cells to assist CONARC (or other major commands) in the conduct of ICTT, JT, TT and FE be assigned to CDEC by expanding the CDEC mission and spaces including 10 professional OR/SA spaces and 3 military OR/SA spaces.	X		DCSMAR Pers Dir	CDEC	30 Apr 72
5.4.j.	That the functions of T&E Division be confined to long-range planning, programming, monitoring, and staff coordination.	X		DCSOPS T&E Dir	--	30 Apr 72
5.4.k.	That C&D Directorate assume responsibility for the Operational Reports Lessons Learned (ORLL) and the Vietnam Combat Operational Data (VCOD) Programs.	X		DCSOPS C&D Dir	--	30 Apr 72
5.4.l.	(1) That T&E resources within HQ CDC be redistributed in Phase I as shown at Figures 7 and 8, pages 28 and 29, Vol I, SATE Study Report.	X		DCSMAR T&E Dir	All	30 Apr 72
5.4.l.	(2) That T&E resources within HQ CDC be redistributed in Phase II as shown at Figures 9 and 10, pages 30 and 31, Vol I, SATE Study Report.		X	C/S	--	--

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APPROVAL/DEFERRAL OF SATE STUDY REPORT RECOMMENDATIONS

Para	Recommendation	Action		Responsibility		Completion Date
		Approved	Deferred	HQ Staff	Command	
6.4.a.	Phase I reorganization actions be completed.	X		DCSMAR Comptroller	All	30 Jun 72
6.4.b.	Detailed plans be developed for the Phase II reorganization of HQ CDC.	X		DCSMAR Comptroller	-----	30 Jun 72
6.4.c.	Test Support Cells from T&E Directorate be relocated as recommended in Chapter 5, out of the HQ and out of the NCR.	X		DCSMAR Comptroller Pers Dir	CDEC	30 Apr 72
6.4.d.	Planning currently underway to transfer the Intelligence and Threat Analysis function from C&D Dir to CONFORG be expanded to include transfer of personnel authorizations.	X		Cofs C&D	CONFORG	FY 73
6.4.e.	A detailed plan be developed by the Director of Organization in coordination with the Comptroller and the Director of Personnel to establish an Organization Field Office (OFO) from the current mission, functions and resources of the Organization Directorate.	X		DCSMAR Comptroller Pers Dir Org Dir	-----	30 Jun 72
6.4.f.	HQ CDC OR/SA assets be reduced IAW Chapter 3 and 5.	X		DCSMAR Pers Dir	SAG CDEC	30 Apr 72
6.4.g.	Eleven staff spaces be identified within MS and C&D Directorate and transferred to INCSG and COMSG IAW Figure 13, pg 34, Vol I, SATE Study Report to support the implementation of the six approved CGM's.		X	Cofs MS Dir C&D Dir	-----	-----
6.4.h.	Additional staff spaces be transferred to the proponent action group on a phased basis to insure smooth, orderly transition to the Phase II headquarters structure.	X		Cofs DCSOPS MS Dir C&D Dir	---	

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APPROVAL/DEFERRAL OF SATE STUDY REPORT RECOMMENDATIONS

Para	Recommendation	Action		Responsibility		Completion Date
		Approved	Deferred	HQ Staff	Command	
6.4.i.	HQ CDC absorb the majority of the civilian space reduction in the NCR.	X		DCSMAR		30 Jun 72

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SATE Study

A Report to The Commanding General, United States Army Combat Developments Command, on Systems Analysis and Test and Evaluation in The U. S. Army Combat Developments Command.

The Study Group

MG Curtis Chapman, DCG, Study Director

LTC John P. Stewart, DCSOPS, Deputy Study Director

Mr. Mark G. Pell, SAG

LTC James L. Templeton, MS

MAJ Peter R. Bankson, Compt

MAJ Arnold L. Larsen, T&E

Mr. Oscar Wells, SAAO, Study Advisor

13 March 1972

FOREWORD

This study examines how systems analysis and test and evaluation can be improved within the combat developments process. The study responds to a 16 December 1971 directive from the Commanding General, USACDC to the Deputy Commanding General, USACDC. That directive requested the DCG to take whatever measures are necessary to develop answers to the following questions.

a. Given our currently authorized resources, what is the most feasible, best balanced schedule for FY 1972-73 for CDC to execute its responsibilities for the entire array of tests and experiments including, but not limited to, DST, ET/ST, EST, Troop Test, ICTT, CDEC Experiments, MASSTER Test, Joint Test, etc?

b. In light of the growing demand for more and better testing and evaluation of military equipment (and related concepts, doctrine and organization), what is the best way for CDC to organize and distribute its resources (including related ORSA assets) for (1) field experimentation, and (2) analysis and evaluation of tests and experiments?

In order to address the questions, the study examined the overall combat developments process, the current CDC Concept of Operations (CDC Pam 10-3) the role of the "Lead Horse" and the Phase II reorganization of HQ, CDC in order to provide the framework for the detailed examination of system analysis and test and evaluation. The study also considered the current Department of the Army deliberations on the future of the Research Analysis Corporation, the need to strengthen Scientific and Engineering capability in CDC, and the Comptroller of the Army Study of Operational Test and Evaluation.

This volume contains the basic report -- the results of our analysis of the issues, conclusions and recommendations. Volume II contains our detailed analysis of the basic issues -- the CD Process, Concept of Operations, Systems Analysis, Test and Evaluation, and HQ CDC. This report could not have been prepared without the major assistance provided by CDEC, the Groups and members of HQ, CDC, all of whom supported the SATE study team.

This study report incorporates the comments and recommendations provided by the HQ CDC Staff, CDC Groups and CDEC.

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CHAPTER I

INTRODUCTION

1.1. The Directive.

1.1.1. On 16 December 1971, the CG USACDC, issued a directive to the DCG USACDC, to provide the answers to the following two problem areas:

a. What is the best way for CDC to organize and distribute its resources (including ORSA assets) for:

- (1) Field experimentation
- (2) Analysis of tests and experiments

b. Given our currently authorized resources, what is the most feasible, best balanced schedule for FY 72-73 for CDC to execute its responsibilities for the entire array of tests and experiments?

1.1.2. The CG provided the following additional guidance:

a. Assume no change in emphasis on our middle-management concept whereby each group will be capable of exercising a full CD role from systems analysis, through production of doctrine; organization; and materiel requirements, to and including test and evaluation.

b. Assume that a brigadier general (or colonel) will head up our CDC "T&E" organization.

c. Consider the M60A1E2 "lessons learned."

d. Consider previous "SATE" organizational proposals.

e. Improve delineation of responsibilities between Materiel Systems Directorate and "OT&E" organization. Consider EST as the earliest "OT&E" organization responsibility, with Materiel Systems Directorate supporting "OT&E" organization in EST and later tests.

f. Consult and coordinate with CG TECOM, Mr. Dave Hardison, Major General Fulton, Lieutenant General Starbird, Lieutenant General Gribble, Chief of COA Study Team (COL McIndoe), and any others you deem appropriate.

1.2. Background.

1.2.1. The area of test and evaluation has been the subject of continuous study within the Army. During the past two years the President's Blue Ribbon Defense Panel reported on operational testing within the Army, CDC conducted a study for ACSFOR on the merger of CDEC and MASSTER, the BOATWRIGHT Committee reported on the Army's Long-Range Stationing Plan and the Comptroller of the Army undertook a study of the entire test and evaluation process which was completed on 1 February 1972. On 11 February 1971, the DEPSECDEF, Mr. Packard, directed the services to conduct an independent evaluation of hardware developments before recommendations for production were forwarded to DOD. This directive led to increased missions for CDC in the area of test and evaluation. On 17 November 1971, CDC received an augmentation of 36 additional military and civilian spaces to increase CDC capabilities in the area of operational test and evaluation.

1.2.2. The study of systems analysis within CDC has received less attention than test and evaluation. However, in 1970 the CG CDC directed that ORSA personnel be consolidated into the Systems Analysis Group. The consolidation has been completed. Increased emphasis on test and evaluation has increased the need for systems analysis T&E support to the CDC groups. The general draw down on contractual ORSA support plus the recent directive from Congress to reduce the funding levels for "think tanks" such as the Research Analysis Corporation resulted in a greater need for a strong in-house ORSA capability.

1.2.3. The CD Process has been undergoing change over the past two years. The role of the combat developer has increased and the need for field evidence to support decision makers has become a way of life in accordance with the basic policy that Mr. Laird, SECDEF, outlined to the Congress in March 1969. The implementation of the Materiel Need (MN) concept has brought the combat and materiel developers into a closer and better integrated team.

1.2.4. In April 1971, CDC reorganized its subordinate activities and implemented a new concept of operations for the management of the combat developments process. Neither the reorganization nor the concept of operations have been fully implemented and they are not likely to be fully implemented until early FY 73.

1.2.5. Department of the Army and CDC regulations and pamphlets have generally lagged behind the many changes to basic policies and procedures that have occurred over the past few years. Most of the policy and guidance regulations are undergoing revision and exist today in various stages of draft. As a result, existing regulations had to be discarded and the latest draft regulations and policy letters were used to establish the basis for the CD Process, and the role of T&E and SA within that process.

1.3. Statement of the Problem.

1.3.1. This study was designed to determine the organization and distribution of CDC assets which provide for the greatest success in the areas of field experimentation, test and evaluation, and systems, to include best balanced schedules for FY 72-74.

1.3.2. Five principal areas are examined in the study:

- a. Mission and functions of CDC to include OTE and SA.
- b. Current OTE organization and workload.
- c. Current SA Group and workload.
- d. "Lead horse" concept for groups.
- e. Smaller CDC headquarters - staff only.

1.3.3. In addition, consideration was given to:

- a. Current RAC deliberations.
- b. Strengthening scientific and engineering capability in CDC.
- c. Personnel limitations in the National Capital Region (NCR).
- d. Comptroller of the Army study of test and evaluation, 1 February 1972.

1.4. Study Objectives. This study provides recommendations in the following areas:

- a. Life Cycle Model/CD Process.
- b. CDC Concept of Operations ("Lead Horse Concept").
- c. Systems Analysis function and organization in CDC.
- d. Test and evaluation function and organization in CDC.
- e. Phase II, HQCDC Reorganization.
- f. Implementation Plan.

1.5. Organization of the Study.

1.5.1 Study Methodology. This study was conducted in five phases:

a. Study Phase (3 thru 13 Jan 72) - Review of CDC mission and responsibilities, CD Process, current schedules, data from the CDC MIS, and formulation of basic alternatives for each issue.

b. Field Data Collection Phase (14 thru 21 Jan 72). During this phase the results of the Study Phase were reviewed with each major subordinate CDC Commander (less CONFOR) and staff, data, comments and recommendations collected, and areas uncovered for further examination.

c. Analysis Phase (22 thru 26 Jan 72). During this phase data were analyzed and the alternatives developed for analysis against the basic issue followed by an analysis against all of the issues. From these analyses, conclusions were drawn leading to the development of specific recommendations.

d. Draft Report Phase (27 thru 31 Jan 72).

e. Review Phase (1 Feb thru 7 Mar 72).

1.5.2. Study Report. The study report is prepared in two volumes.

Volume I contains the findings, conclusions, and recommendations of the study. Volume II contains the details surrounding each of the five basic issues.

1.5.3. Volume I Report. Chapters 2 through 6 contain the findings, conclusions, and recommendations for the five basic issues. Chapter 7 provides recommendations for the implementation of the recommendations contained in Chapters 2 through 6.

CHAPTER 2

THE COMBAT DEVELOPMENT PROCESS

2.1. GENERAL.

2.1.1. BASIC PROCESS. A simplified portrayal of the complex combat developments process is shown in Figure 1. In this process, CDC normally acts as the Army's overall planner, developing new concepts for the future Army, integrating men, equipment and procedures into basic combat and combat support systems and developing larger unit structures which balance the capabilities of the basic combat and support systems to meet the many and varied mission requirements of the Army in the field.

BASIC COMBAT DEVELOPMENT PROCESS

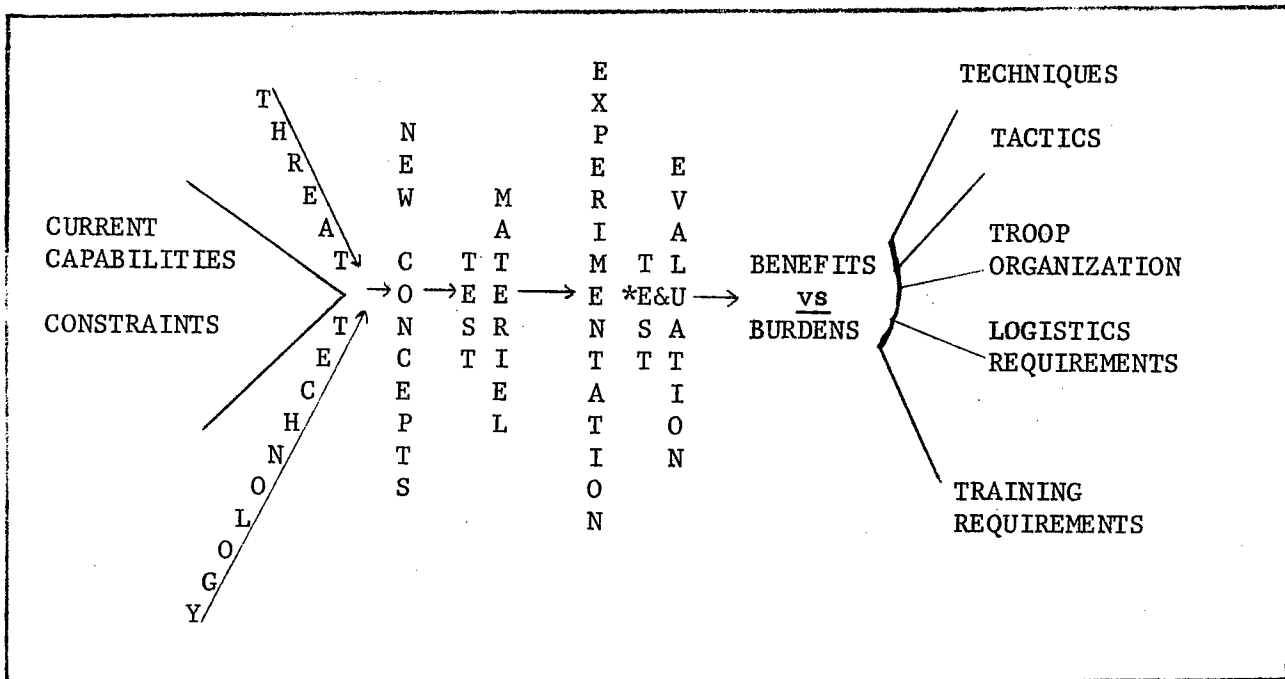


Figure 1

2.1.2. RESPONSIBILITIES. More than 20 Army regulations detail basic CDC mission and functions. Many of the key regulations are now under revision, reflecting the changing nature of CDC's overall mission and functions.

2.1.3. LIFE CYCLE MANAGEMENT MODELS (LCMM). LCMMs are flow charts which show the sequence in which interrelated actions must take place. LCMMs insure continuous development and acquisition of a balanced system of effective doctrine, organization, and materiel. AR 11-25 and AR 18-1 are the basic Army guidance documents for LCMMs.

2.2. FINDINGS.

a. The current life cycle does not show the relationship of CONAF (the Conceptual Design for the Army in the Field) to the development of doctrine, organizations, and materiel needs for the Army.

b. The current LCMM (DA Pam 11-25) is out of date. Draft revisions at HQ DA have been deferred because of higher priority projects. A draft prepared by the CDC/AMC board which developed the MN Concept is currently being used by DA, but recent major changes in OTE have not been incorporated. Until a revised DA Pamphlet 11-25 is published, the LCMM will be of limited value to CDC. The DA action officer responsible for the LCMM has indicated a willingness to use a CDC draft revision of the LCMM to begin coordination of a revision to DA Pamphlet 11-25.

c. The complexity of the LCMM limits the value of the model for instructional purposes.

d. Action officers need an updated model of the CD process, based on the new CDC organization and concept of operations.

e. Systems design/systems engineering of combat systems is not portrayed in the life cycle.

2.3. CONCLUSIONS.

a. The LCMM should be revised to reflect the current management and decision making process for systems development within the Army. This is a necessary prelude to revision of the CDC management model.

b. A simplified flow chart of CD life cycle responsibilities should be developed for use within CDC to show the interrelationship of combat development products.

c. A detailed life cycle model, describing the internal process of CDC operations, is needed for use by action officers and first-line managers throughout the command.

d. DA life cycle should show the dynamics of the CD process.

2.4. RECOMMENDATIONS.

a. The basic DA life cycle be updated to include the current management and decision-making process for development of combat systems, and forwarded to DA as the initial draft of the new DA life cycle.

b. A simplified life cycle of the CD process be developed for instructional use within CDC.

c. A detailed life cycle of the CD process be developed to show the dynamics of the CD process in the current CDC concept of operations.

d. Systems engineering/systems integration be incorporated into the CD process.

CHAPTER 3

CONCEPT OF OPERATIONS

3.1. General.

3.1.1. Background. The CDC concept of operations to accomplish the CD mission has varied considerably since the Combat Developments Command was created. In general, the CDC concept of operations has been shifting away from the use of very complex combat development plans, which extended well into the future and away from an interest in "studying" problems. Now, the emphasis is on field experimentation and on obtaining operational data from field evaluations to assist decision makers in "solving" problems.

3.1.2. Current Concept. The CDC concept of operations for FY 72 builds on the accumulated experience in managing combat developments. CDC adopted an open-ended problem oriented approach to planning and programing its work for FY 72. First priority has gone to identifying those major problems of the Army in the field which can be solved by combat developments activities. Intensified management is focused on solving these problems. "CDC Command Priority Objectives" (CPO) frame the broad substantive objectives for CDC combat development activities. These objectives are the Command direction on which capabilities of the Army should be improved considering the threat, technology, and returns in increased combat effectiveness. The basic CDC planning and programing document for each major program is called the "Command Guidance Memorandum (CGM)." Overall action responsibility for managing a major program is assigned to the Group with the preponderance of the action.

3.1.3. Responsibilities. The current concept of operations establishes three levels of responsibility for CDC actions:

a. HQ CDC: Responsible for identifying Command Priority Objectives, preparing Command Guidance Memoranda, changing these program documents in light of day-to-day operations, and insuring that the CDC Commanding General's guidance on the direction and quality of CDC work is carried through. HQ CDC is charged with monitorship and review of those actions carried on the Commanding General's Significant Action List (SAL).

b. Action Proponent Group: Responsible for implementing the directions in the CGM and fulfilling other mission requirements.

c. Supporting Group: Designated for each action in a CGM and responsible for carrying out supporting tasks for the designated Action Group.

3.1.4. Current Status.

a. Basic Concept. The Commanding General CDC approved the basic concept of operations on 30 March 1971 for implementation in FY 72. The basic document describing the concept of operations was published as CDC Pamphlet 10-3 on 15 June 1971. Each CDC group was briefed on the substance and content of the concept prior to the publication of the pamphlet. To date, approximately 1,500 copies of the pamphlet have been distributed within the Command.

b. CDC Programs. Figure 2 contains the status of the 16 programs currently identified for development into Command Guidance Memoranda (CGMs). Only six programs have been approved to date. This represents about 50 percent of the initial goal set in June 1971. The shortfall in program development is attributed to the shortage of DCSOPS personnel to coordinate the actions associated with the development of each CGM. In November 1971, DCSOPS was provided with the personnel necessary to develop the programs.

c. CDC Significant Actions List (SAL). The initial CDC SAL list was developed in July 1971, based on a subjective review of each of the 1700 active actions against the CDC Pamphlet 10-3 criteria and the Command Priority Objectives (CPO). The SAL list has been modified when each CGM is published and also based on experience gained in identification and tracking on the actions of particular interest to the Commanding General.

d. Management Information Systems (MIS). The MIS in being in HQ CDC prior to the implementation of the current concept of operations was inaccurate and ineffective as a tool for managing the activities within the Command. Thus, the principal managers within the Headquarters did not use the MIS as an integral part of their management operations. The current concept of operations called for an immediate upgrading of the current system and the development of an experimental MIS system to improve effectiveness while reducing the overhead connected with CDC management (currently 5 percent of the total personnel in CDC).

e. Combat Development Operations Center (CDOC). Initial work on the CDOC began in July 1971. Field visits were made to AMC, CONARC, MASSTER, AVSCOM, and the Army Operations Center to view the ways command management centers are organized and operate. The initial CDOC efforts were unsuccessful despite the large staff effort involved. The primary difficulty with the initial CDOC was that it was designed to display data under the old management concept resulting in the display of large amounts of data with little or no relationship between one bit of information and another. The CG was not aided by the CDOC, therefore, it was redirected to

CDC PROGRAMS

Number	Title CDC Program	Publication Date
1-72	Integrated Battlefield Control System	15 Jul 71
2-72	Intelligence/STANO	30 Aug 71
3-72	Tank/Antitank	23 Dec 71
4-72	Communications-Electronics	17 Nov 71
5-72	Airmobility/Airspace Operations	23 Dec 71
6-72	Civil Emergency/Disturbance Operations	17 Nov 71
7-72	Logistics	Apr 72
8-72	Tactical Nuclear Warfare	May 72
9-72	Stability Operations	Mar 72
10-72	Air Defense	Mar 72
11-72	Strategic Mobility	May 72
12-72	Personnel Systems	May 72
13-72	Electronic Warfare	May 72
14-72	Force Design	Apr 72
15-72	Anti-Personnel/Anti-Materiel Battle Systems	Apr 72
16-72	Ground Mobility	May 72

Figure 2

display data in accordance with CDC Pamphlet 10-3. Current efforts are now directed to the display of program management information and the CDOC is now beginning to provide the command group with useful management information.

3.2. Findings.

a. Reorganization of CDC commands in April 1971 and CDC HQ in September 1971 was pointed towards the medium lead horse concept described in Annex B.

b. Full implementation of the current concept of operations cannot be realized until Phase II Reorganization of HQ CDC occurs. To date, lead horses have been established for the six CDC programs (CGMs) that have been approved and published. INCS Group is in the best posture since it has an approved program for each of its major areas of responsibility. PALS and CONFOR have no approved programs and COMS has three of the eight programs that it will eventually receive.

c. The problem with program implementation centers around HQ CDC. The concept of operations envisioned a smaller HQ CDC structured to manage the SAL actions. With few exceptions, HQ CDC still continues to do business as usual with the result that the groups have been reluctant to revamp their operations even though they have expanded responsibilities and authorities. The groups have not received any resources to assist them in executing their expanded management and operational responsibilities. The lack of dynamic program management systems within the groups indicates that CDC, in effect, has undergone little change in the way it conducts its business. In order to achieve the initial goals of the current concept of operations and the associated "lead horse" concept, focus must be placed on the following areas.

(1) Expedite the completion of the basic 15 to 20 CDC programs.

(2) Reduce the size of HQ CDC and apply the resources to the groups.

(3) Restructure the group headquarters along a program management basis to give the "lead horses" the management tools to carry out their responsibilities.

d. The "lead horse" concept is not well understood within CDC and this is attributed to a lack of staff visits by HQCDC to subordinate groups and agencies to explain the concept. CDC management regulations and publications have not been revised to reflect the current concept of operation.

e. CDC program documents (CGMs) were only 37.5 percent complete as of January 1972 as opposed to the 70 percent goal established for 31 December 1971.

f. The current MIS in CDC is not used by the senior CDC managers/commanders.

g. The CDOC has not reached its potential as a useful cost/effective management information center.

h. Work on the program to obtain an advanced state-of-the-art command/operation MIS subsystem has stopped.

i. The groups have not restructured their HQ to provide for visible program management except INCS which has implemented systems management.

j. Imposed reductions of civilian strength in the National Capitol Region (NCR) (down to 440 by 30 June 1972) require CDC to move operational/staff elements outside of the NCR.

k. Group commanders indorsed the current concept of operations (Commanders' Workshop, 2 Feb 72).

3.3. Conclusions.

a. Current concept of operations is valid.

b. CDC concept of operations contained in CDC Pamphlet 10-3 has not been effectively implemented.

c. Resources must be removed from the HQ and transferred to the groups in order to carry out the current concept.

d. Actions outlined in CDC Pamphlet 10-3 must be carried out if CDC is going to realize any benefits from the recent reorganization.

e. The current concept of operations must be understood by all members of the Command.

f. CDC groups must streamline their HQ organization in order to effectively manage assigned programs.

3.4. Recommendations.

a. Current concept of operations remain in effect.

b. Reorganization actions be expedited to achieve the medium "lead horse" configuration.

c. DCSOPS/DCSMAR expedite and guide implementation of the current concept of operations, including reorganization actions, revision of publications, transfer of personnel, educating the command, and provisions of management assistance to the groups.

d. CDC groups reexamine the existing and proposed HQ organization plans with a view toward realignment along major program lines.

e. Effort on the experimental command/operation MIS subsystem described in CDC Pam 10-3 be renewed for accomplishment as a FY 73 management goal.

f. CDOC as a manual management tool be phased out during FY 73 as the new CDC CMIS and the experimental command/operation MIS subsystem are brought into operation.

CHAPTER 4

OPERATIONS RESEARCH/SYSTEMS ANALYSIS (OR/SA)

4.1. GENERAL.

4.1.1. DEFINITION. There are many definitions of operations research. Some are quite formal and say in essence that OR is a scientific method for providing decision makers with a quantitative basis for decisions regarding operations under their control. Another meaningful definition states that OR in the most general sense can be characterized as the application of scientific methods, techniques, and tools to problems involving the operations of systems so as to provide those in control of the operations with optimum solutions to the problems. A less formal but equally good definition of OR calls it the art of giving objective, statistically reliable solutions to problems that otherwise would be solved subjectively.

4.1.2. AVAILABLE TECHNIQUE. Techniques and procedures used in the solution of problems by operations research methods are shown below. For a given problem, the operations analyst can select any of these or any combination:

- a. Analytic Modeling
- b. Simulation
- c. Research Gaming
- d. Field Experimentation
- e. Troop Testing
- f. Cost/Effectiveness Analysis
- g. Human Factors Analysis

4.1.3. OR/SA IN THE CD PROCESS. Operations Research/Systems Analysis (OR/SA) has been used in the combat developments process since the 1950's when the Army first designated an organizational element in the Continental Army Command to be responsible for combat developments. This OR/SA support was provided until the late 1960's by contract support from a variety of sources. The Combat Developments Experimentation Command (CDEC) has traditionally had its own scientific support office provided by contractors. In the late 1960's USACDC organized the Institute of Systems Analysis (ISA) with the objective of providing an in-house operations research

capability to USACDC. ISA has since been redesignated as the Systems Analysis Group (SAG) and it now has a capability of some 105 (annually) professional man-years of effort. This total effort was made possible by the consolidation of most of the command's civilian Operations Research Analysts (GS 1515 series) under SAG. Decision to consolidate civilian OR analysts under one command was based on (1) the desire to improve utilization of OR/SA capability and (2) to make possible the application of scarce personnel resources on mainstream problems of the Command. These objectives have been realized. They are being partially offset by the OPCON of the Fort Leavenworth Field Office to CG COMSG. Specific steps in the Life Cycle Management Model have been identified as events in the materiel development process where OR/SA support should be used to assist in problem identification, evaluation of trade-offs, alternatives, and possible decisions. See Volume II, Annex A, of this report.

4.2. FINDINGS.

a. Contrary to popular belief that all OR/SA assets are consolidated under SAG, Figure 3 lists the OR/SA resources found within the Command.

CDC OR/SA SPACE AUTHORIZATIONS

UNIT	TDA AUTH MOS 8700 OFF	ACTUAL WG PLAYERS	TDA AUTH CIV	TOTAL	FY 72 MAN-YEAR EQUIVALENT CONTRACTOR	OR/SA MAN-YEARS TOTAL
HQCDC	6		18	24	15	39
COMS	14	1*	12	27	44	71
INCS	7		1	8	40	48
PALS	4		5	9	14	23
CONFOR	5	11**	3	19	20	39
SAG	19		82	101	23	124
SSI					3	3
CDEC	19		1	20	151	171
TOTAL	74	12	122	208	310	518
*1 officer. **1 officer (MOS 8700; 8 officers (non-MOS 8700; and 2 civilians (gamers).						

Figure 3

b. As of 27 January the following OR/SA qualified officers were assigned to CDC.

Assigned personnel with graduate level degrees against MOS 8700 spaces	37
Assigned - members of OR/SA Officer Career Program but without graduate level degree	20
*Assigned - officers carrying MOS 8700 by reason of performance in MOS 8700 position	<u>46</u>
	<u>103</u>

*Of this total a maximum of 20 are assigned to SAG. This category includes officers on obligated tour, assigned by reason of their civilian education or training which qualifies them for OR/SA. This source of officers will dry up in the future but should be offset by increased output from OR/SA Masters Degree Programs at Tulane, Georgia Tech, and the Naval Post Graduate School.

c. The space authorizations in Figure 3 include civilian GS1515 Operations Research Analysts, Scientific Advisors regardless of GS series and military MOS 8700. Not included (except in the case of SAG) are civilian authorizations in related scientific skills such as mathematicians, statisticians, engineers, chemists, and others who may be used in mission areas other than OR. Prefix H (OR/SA executive) military are not included. Because of the extent and diversity of CONFORG scientific personnel, they are listed at Figure 2.a, Volume II, Annex C.

d. CDC now has two war game facilities neither of which are part of SAG. One game is under CONFORG and is used exclusively for support of LCS. The other game is under COMSG and has not been operational for three years. Availability of these games to support the entire command would be improved by centralizing the war game function under SAG control. This would improve the array of evaluation tools available for command projects without regard to proponent.

e. Additional T&E OR/SA support functions and spaces could be assigned to SAG at Fort Leavenworth and Fort Lee. This would help meet the NCR limitation on personnel and permit early recruitment of vacant spaces. However, OPCON of the Fort Leavenworth Field Office limits the flexibility of the CO SAG in use of these assets to support Command Priorities.

f. Approximately 25 percent of the FY 72 contract study program for OR/SA support is obligated. All of the program is earmarked for projects and most is committed.

g. Volume 2, Annex A, identifies the basic areas on the Life Cycle Management Model requiring OR/SA support.

h. Ninety-five percent current SAG support is applied to SAL actions managed by HQCDC.

i. Present FY 73 planning indicates some reduction in OR/SA contractual requirements.

j. OR/SA in-house capability has had a measurable improvement since basic assets were consolidated in 1970.

k. OR/SA support is required for the Test Support Cells CDC must provide to CONARC and overseas commands for ICTT, Troop Tests, and Field Evaluations.

l. Groups have a continuing requirement for OR/SA support in the expanded area of OTE.

m. A desk audit of the duties of each military OR/SA officer could not be undertaken. General observation within the Command and direct observation within HQCDC indicates that the military OR/SA space is used for general purpose activities instead of specific OR/SA activities.

n. FY 73 OR/SA requirements can be met under the following conditions.

(1) Military OR/SA personnel be assigned to full-time OR/SA duties.

(2) HQCDC OR/SA spaces be reduced to a small review capability with the remainder of the assets applied to meeting basic OR/SA requirements.

(3) SAG be provided replacement resources to offset the loss of capability due to the OPCON of the Fort Leavenworth Field Office.

o. CDC evaluation activities have not been based on an overall plan such as the Coordinated Test Programs developed by AMC for materiel items. CDC should develop a Consolidated Evaluation Program for major combat developments which plans the use of the most appropriate evaluation technique at each step in development. (See paragraph C-6.d, Volume II.)

4.3. CONCLUSIONS.

- a. Centralizing basic OR/SA assets in SAG has produced a marked increase in OR/SA capability in-house.
- b. Groups must make full use of authorized and assigned scientific assets.
- c. HQCDC OR/SA assets must be reduced in the review area and applied to meeting basic OR/SA requirements.
- d. CDC needs to fill the vacant OR/SA spaces on an expedited basis.
- e. CDC has to better integrate the use of OR/SA including the war game capability, in its day-to-day CD process.
- f. Some OR/SA support needs to be available to Test Support Cells CDC must provide to CONARC and overseas commands.
- g. Current NCR constraints will limit the number of additional OR/SA personnel that can be brought into or hired in the Washington area.
- h. Assignment of responsibility for OR/SA support of T&E (except Test Support Cells) should be given to SAG provided the functions are located outside of the National Capital Region.
- i. The objective of Conclusion h is to develop a CDC Evaluation Center operated by SAG at Fort Leavenworth. Such a center could exploit the new computer, the availability of a war game facility and the availability of the full range of personnel skills in SAG. This objective is not compatible with group OPCON of Field Offices.

4.4. RECOMMENDATIONS.

- a. The current concept of the centralized SAG be retained.
- b. Command emphasis be applied to the proper use of OR/SA military personnel within CDC.
- c. OR/SA be used in a systematic manner for all combat developments IAW the life cycle discussed in Chapter 2 and command priorities.
- d. Actions be stepped up to fill the OR/SA vacancies in the CDC TDA.

e. That additional T&E OR/SA support functions be assigned to SAG and personnel authorizations be added to the SAG Field Offices to permit early recruitment to fill vacant spaces.

f. That the Leavenworth War Game function be assigned to the SAG Field Office.

g. That new OR/SA T&E support functions be combined with the SAG Field Office to develop a CDC Evaluation Center at Fort Leavenworth to exploit the new computer, the War Game facility, and the flexibility of the entire bank of SAG personnel skills.

h. OR/SA assets be redistributed as follows:

ORSA SPACE DISTRIBUTION

UNIT	PROPOSED			CHANGE		
	OFF	PROF CIV	TOTAL	OFF	PROF CIV	TOTAL
HQ CDC						
DCSOPS	0	3	3	-1	-5	-6
* EVAL	1	1	2	-3	-10	-13
COMSG	14	12	26			
INCSG	7	1	8			
PALSG	4	5	9			
CONFORG	5	3	8			
SAG	20	95	115	+1	+13	+14
SSI						
CDEC	22	1	23	+3		+3
Space Reduction		2	2		+2	+2
Above figures do not include: non-professional spaces; War Gaming spaces (except 1 Military MOS 8700 at CONFORG); non-OR/SA spaces given to CDEC which they may use as OR/SA spaces. *See Chapter 5 for other T&E Directorate assets and redistribution.						

Figure 4

i. Specific spaces including non-OR/SA support be transferred as shown in Annex C.

j. That CDC initiate a Consolidated Evaluation Plan (CEP) for each major combat development. This CEP would specify the essential evaluation steps to be used during development. The CEP would use gross methods in the early stages of the CD program to more precise techniques in the final stages. This plan should assist in the early identification of initial issues and essential data required to confirm and validate the overall CD Program.

k. OPCON status of the Fort Leavenworth SAG Field Office be reviewed at the end of the 1st Qtr, FY 73.

l. Consideration be given to the redesignation of the SAG Fort Lee Field Office as the Logistics Analysis and Evaluation Center following the evaluation of the results of k, above.

CHAPTER 5

TEST AND EVALUATION

5.1. GENERAL.

5.1.1. The test and evaluation effort within the Army is divided into developmental tests and user field tests. At DA Staff level, the CRD has responsibility for developmental tests and the ACSFOR has responsibility for user field tests. At the major Army command level, the Materiel Developer (normally USAMC) is responsible for developmental tests and the Combat Developer (normally USACDC) is responsible for user field tests. AR 70-10 (Test and Evaluation during Development and Acquisition of Materiel) prescribes policy, responsibilities, and procedures for developmental tests conducted during the acquisition process for materiel systems. AR 71-3 (User Field Tests) prescribes policy, responsibilities, and procedures for user field tests which may be either conceptual or materiel driven.

5.1.2. TEST AND EVALUATION IN THE MATERIEL ACQUISITION PROCESS. The purpose of materiel testing and evaluation of tests results is to continually guide the materiel acquisition effort and provide a basis for determining the operational effectiveness and suitability of a new materiel system for Army use. CDC has a vital role in both developmental and user field tests. New functions have been assigned to CDC by AR 70-10 and DA directives on OTE (including the ACSFOR letter dated 30 November 1971, subject: Conduct of Operational Test and Evaluation).

5.1.3. TEST AND EVALUATION IN THE COMBAT DEVELOPMENTS PROCESS. Certain testing and experimentation done by the U. S. Army is primarily oriented on the future combat developments process. These tests are thus primarily conceptually driven in contrast to being materiel oriented. Prime examples of such tests are the ACCB/TRICAP series of tests by MASSTER at Fort Hood and the series of Attack Helicopter Experiments by CDEC at Fort Ord. Such tests provide the combat developments process with vital tools necessary to develop, examine, compare, or validate new doctrinal, procedural, or organizational concepts. They provide the objective scientific basis for continued development of new concepts. They may also be employed to test new materiel concepts before prototypes are available to enter testing in the materiel life cycle. User field tests (though including the ICTT) are generally conceptually driven and are oriented toward the combat developments process. This study emphasizes the new functions assigned to CDC by AR 70-10, DA directive on OTE and draft AR 71-3 in both the materiel acquisition and the combat developments process.

5.1.4. TEST AND EVALUATION. Eight basic steps are common in all types of testing. The names associated with each step vary with the type of test but for the purpose of analysis, the eight steps are identified in Figure 5.

STEPS IN TEST AND EVALUATION PROCESS

<u>STEP</u>	<u>DESCRIPTION</u>	<u>RESPONSIBILITY</u>
(1)	Identification of Test Requirements	CDC/AMC
(2)	Test Proposal	CDC/AMC
(3)	Test Directive	DA/AMC/CDC
(4)	Project Analysis	Test Director
(5)	Detailed Test Plan	Test Director
(6)	Test Execution	Test Director
(7)	Test Report	Test Director
(8)	Evaluation of Results	CDC/AMC

Figure 5

CDC groups and agencies are directly involved and/or responsible for Steps 1, 2, and 8. They additionally assist the professional tester in Steps 4 through 7. Professional test organizations (TECOM, CDEC, and MASSTER) conduct Steps 4 through 7, except for tests conducted by CONARC or overseas commands. In this case, CDC must provide professional test support. CDC (or the test proponent) normally has approval authority over the Detailed Test Plan in Step 5.

5.1.5. CDC TEST AND EVALUATION MANPOWER REQUIREMENTS (FY 73). The CDC level of effort to support T&E activities has increased sharply since publication of AR 70-10 and the DA directive on conduct of OTE. This workload increase is due primarily to the following new or expanded CDC responsibilities:

- a. Identification of critical issues during the conceptual phase of the life cycle.
- b. Refinement of critical issues in the Coordinated Test Program (CTP).

c. Requirement for increased participation in Developmental Suitability Tests (DST) and Expanded Service Tests (EST).

d. Requirement to provide the CofS of the Army with an independent evaluation of EST and ICTT prior to major production decisions.

e. Requirement to provide Test Support Cells for the Intensified Confirmatory Troop Tests (ICTT), Troop Tests (TT), Field Evaluations (FE), and Joint Tests (JT).

Figure 6 summarizes CDC action group and agency manpower requirements to support all T&E activities in FY 73. T&E requirements for FY 73 amount to 14.5 percent of the total CDC group and agency production capability (1,284 MY). This excludes CDEC, HQCDC Staff (17 spaces minimum) and Test Support Cells provided to CONARC (45 spaces maximum).

FY 73 TEST AND EVALUATION MANPOWER REQUIREMENTS
(in man-years)

TYPE TEST	COMS	INCS	PALS	CONFOR	TOTAL
Developmental Tests (CTP, DST/EST, RMA Critical Issues)	44	2	30	1	77
User Field Tests (ICTT, FLDEXP, TT, FE, JT, MASSTER Tests)	58	35	12	3	108
TOTAL	102	37	42	4	185

Figure 6

5.2. FINDINGS.

a. EST and ICTT requirements and schedules are determined well in advance as each CTP is developed, while procedures for identifying requirements for user field tests (other than ICTT) are ill-defined.

b. The Test Schedule Review Committee (TSRC) used for MASSTER tests is a valuable DA management tool. No similar tool is available for other types of user field tests.

c. The recent evolution of the OTE process has rendered AR 70-10, AR 71-3, and other DA and CDC implementing regulations and directives obsolete.

d. DA has provided no guidance to the major commands for conduct of the Military Potential Test (MPT). The impact of this test on CDC is unknown, although the ACSFOR has recently assumed DA Staff responsibility from CRD.

e. Current CDC regulations promulgating policy, guidance, and procedures regarding T&E are contained in four separate regulations and numerous pamphlets and other CDC documents.

f. Fragmentation of the T&E effort at DA and HQ CDC (between MS and T&E Directorates) is not desirable and has caused confusion at the action group level.

g. The organization for accomplishment of the T&E mission differs with each action group.

h. Procedures have not been established with AMC/TECOM to precisely define CDC's expanded role in the DST and EST; nor with CONARC to define the CDC Test Support Cell's role in the ICTT and other user field tests.

i. The percentage of the total action group/agency workload for all T&E activities in FY 73 is depicted below:

<u>COMSG</u>	<u>INCSG</u>	<u>PALSG</u>	<u>CONFORG</u>
55%	20%	23%	2%

j. FY 74 and subsequent fiscal year manpower requirements decline sharply from FY 73 levels.

k. Action groups do not have sufficient personnel resources to plan for, participate in, and conduct independent evaluations of all DST and EST without adjustment of resources within CDC.

l. Group headquarters involvement in T&E activities is generally limited to monitoring the T&E effort of their respective agencies. Considering all types of test, group headquarters personnel provide only about 20 percent of the total level of effort, while agencies provide the remaining 80 percent.

m. Action groups have sufficient resources for user field test responsibilities.

n. CDC professional Test Support Cells provided to CONARC (or designated overseas commands) Test Directors must contain the following type personnel:

(1) OR/SA personnel for test design, project analysis, and data analysis.

(2) Non-OR/SA professional test officers.

(3) Officers knowledgeable in the concept, doctrine, organization, and materiel being tested.

o. Twenty-four (24) civilian spaces assigned CDC on 17 November 1971 for Test Support Cells cannot be filled in the National Capital Region (NCR) due to recent DA guidance.

p. Only 17 of the 45 Test Support Cell spaces in T&E Directorate provided by DA have been filled.

q. The Operational Reports Lessons Learned (ORLL) and Vietnam Combat Operational Data (VCOD) Programs are not compatible with T&E Directorate functions.

5.3. CONCLUSIONS.

a. CDC needs a systematic approach for developing field experiment and user test requirements for each major combat development program in a fashion similar to the CTP for materiel systems.

b. Procedures for scheduling and reviewing user field tests and experiments should be similar to TSRC proceedings for MASSTER tests.

c. DA should revise and publish AR 70-10, AR 71-3, and other regulations concerning T&E as soon as possible.

d. The recent change in DA staff responsibility for the MPT will increase CDC's participation in this test; however, the extent cannot be determined until DA (ACSFOR) issues guidance.

e. Current regulations, guidance, and procedures that promulgate CDC policy regarding T&E should be consolidated into one basic regulation with supplemental pamphlets.

f. The split of OTE between developmental and user field testing creates a cumbersome staff relationship at DA level between the CRD and the ACSFOR, and at the major Army command level between CDC and AMC.

g. Staff procedures between HQCDC and subordinate elements are complicated by the splits in T&E responsibilities at HQCDC and action group levels.

h. Staff responsibilities for all T&E activities at HQCDC and at each action group should be in one office.

i. Specific procedures and levels of effort need to be worked out between CDC and AMC (TECOM) to precisely define relationships between the TECOM boards and the CDC agencies for the EST and DST, similar procedures must be developed between CDC and CONARC for the ICTT and other user field tests.

j. Action groups and agencies require additional resources to carry out DST and EST responsibilities.

k. The current CDC organization does not provide organic (or readily available) OR/SA support necessary to assist groups and agencies in preparation of the DST and EST plans.

l. The current allocation of T&E resources within CDC should be realigned by augmentation of group strengths based on the percentages shown below:

<u>COMSG</u>	<u>INCSG</u>	<u>PALSG</u>	<u>CONFORG</u>
55%	20%	23%	2%

m. CDC Test Support Cells.

(1) CDC must develop a pool of professional test experts to form the nucleus of Test Support Cells that CDC is required to provide CONARC (or designated overseas commands) during the detailed planning, execution, and reporting of ICTT, JT, TT, and FE.

(2) OR/SA skills must be provided in the pool of test experts.

(3) The remainder of each Test Support Cell should be provided by the proponent action group and/or agency.

n. CDEC has the professional expertise and large base necessary to develop, retain, and effectively utilize the Test Support Cell personnel to best accomplish the assigned task of assisting CONARC (or other designated overseas commands) Test Directors in conduct of ICTT, JT, TT, and FE.

o. The 24 unfilled civilian spaces in the T&E Directorate should be removed from the NCR and hired.

p. The ORLL and VCOD Programs are more compatible with the functions of C&D Directorate than their current location in T&E Directorate.

5.4 RECOMMENDATIONS.

a. That the current Test and Evaluation Directorate be reduced in size and placed into DCSOPS as a T&E Division with the Test Support Cells transferred to CDEC, selected ORSA spaces transferred to SAG, and the remaining spaces transferred to the groups.

b. That the DA TSRC proceedings be utilized for scheduling and review of all user field test proposals.

c. That staff responsibility within HQ CDC for the CTP, DST, EST, independent evaluation and user field tests be assigned to the T&E Division and MS Directorate responsibilities be modified accordingly.

d. That each action group establish a single identifiable T&E element to coordinate the CTP, OTE, and other user field test activities.

e. That the T&E Division prepare, on a priority basis, the following documents relating to test and evaluation activities.

(1) Joint CDC/AMC (TECOM) memorandum of agreement (MOA) and CDC's involvement in the DST and EST.

(2) Joint CDC/CONARC MOA on CDC's Test Support Cell involvement in the ICTT and other user field tests.

(3) Single CDC regulation governing T&E policy and responsibilities within CDC (combine CDC Regulations 71-4, 71-7, 71-8, and 71-9).

(4) Detailed implementing instructions and procedures to augment the regulation in paragraph (3) above.

f. That action groups insure the HQ CDC and AMC (TECOM) MOA is implemented and supplemented as necessary at agency/board level.

g. That the action groups be augmented to carry out DST and EST responsibilities.

h. That the SAG field offices be augmented with OR/SA personnel to assist action groups in analysis of T&E requirements and evaluation of test results.

i. That Test Support Cells to assist CONARC (or other major commands) in the conduct of ICTT, JT, and FE be assigned to CDEC by expanding the CDEC mission and adding 45 spaces including 10 professional civilian OR/SA spaces and 3 military OR/SA spaces.

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j. That the functions of T&E Division be confined to programming, scheduling, monitoring, and staff coordination of CDC T&E actions.

k. That C&D Directorate assume responsibility for the Operational Reports Lessons Learned (ORLL) and the Vietnam Combat Operational Data (VCOD) Programs.

1. That T&E resources within HQ CDC be redistributed as follows:

(1) Phase I. This phase can commence immediately IAW Chapter 7 (Implementation). CDEC and SAG should receive the spaces as soon as possible. Net gains and losses from current authorized strength are shown in Figure 7. The proposed organization of T&E Division and its strength, mission, and functions are at Figure 8.

T&E LOSSES AND GAINS - PHASE I**

	<u>OFF</u>	<u>PROF CIV</u>	<u>EM</u>	<u>CLR CIV</u>	<u>TOTAL</u>
HQ T&E Dir	-33	-20	-11	-9	-73
HQ MS Dir	- 2	---	---	--	- 2
HQ C&D Dir	+ 1	---	+ 1	--	+ 2
CDEC	+23	+10	+ 8	+4	+45
SAG T&E Div	---	+ 1	---	+1	+ 2
*SAG Fld Off	---	+ 7	+ 1	---	+ 8
#SAG Fld Off	---	+ 2	---	---	+ 2
COMSG	+ 5	---	+ 1	+1	+ 7
PALSG	+ 3	---	---	---	+ 3
INCSG	+ 3	---	---	---	+ 3
*Fort Leavenworth					
#Fort Lee					

Figure 7

**Three Clerical Civilian spaces are deleted from the CDC TDA.

See Appendix 18 to Annex D, Volume II, for detailed TDA changes.

T&E DIVISION - PHASE I **

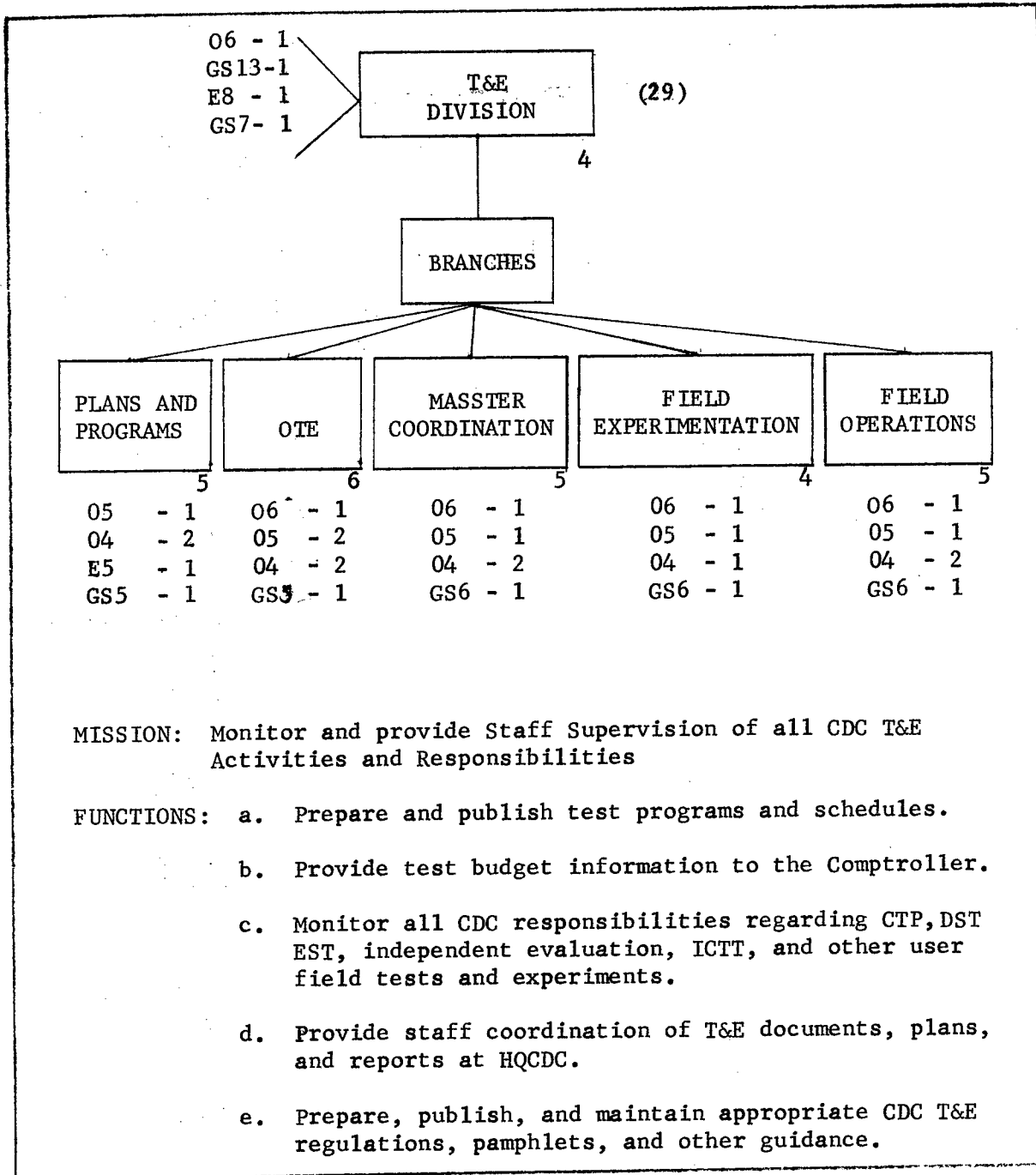


Figure 8

** See Appendix 18 to Annex D, Volume II for detailed TDA.

(2) Phase II; This phase will not commence earlier than 1 July 1972 and is dependent upon many factors to include CGCDC approval of the Phase II Reorganization of HQCDC, implementation of COA Study results by DA, and ability of Phase I to improve management of combat developments activities. Phase II should not be implemented until three conditions have been met:

(a) Phase I has been fully implemented and functioning for several months.

(b) Recommendations d, e, and f above have been accomplished.

(c) All other directorates at HQCDC simultaneously are eliminated and DCSOPS systems oriented divisions are formed to replace directorates.

Net gains and losses from current authorized strength are shown at Figure 9. The proposed organization of the DCSOPS OTE Division, and it's strength, mission, and functions are at Figure 10.

T&E LOSSES AND GAINS - PHASE II**

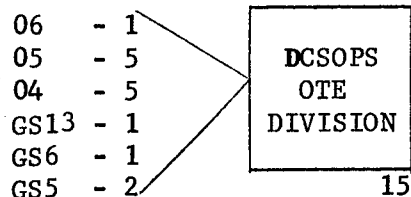
	<u>OFF</u>	<u>PROF CIV</u>	<u>EM</u>	<u>CLR CIV</u>	<u>TOTAL</u>
*HQ T&E Dir	-42	-20	-13	-12	-87
*HQ MS Dir	- 2	-	-	-	- 2
*HQ C&D Dir	+ 1	-	+ 1		+ 2
CDEC	+23	+10	+ 8	+ 4	+45
SAG T&E Div	-	+ 1		+ 1	+ 2
#SAG Fld Off	-	+ 7	+ 1		+ 8
+SAG Fld Off	-	+ 2	-	-	+ 2
COMSG	+ 9	-	+ 3	+ 2	+14
PALSG	+ 5	-	-	+ 1	+ 6
INCSG	+ 5	-	-	+ 1	+ 6
CONFORG	+ 1	-	-	-	+ 1
*now in DCSOPS					
#Fort Leavenworth					
+Fort Lee					

Figure 9

** 3 Clerical Civilian spaces are deleted from the CDC TDA.

See Appendix 18 to Annex D, Volume II for detailed TDA changes.

T&E Division - PHASE II **



MISSION: Monitor all CDC T&E activities and responsibilities and provide staff supervision over all T&E actions on the SAL.

- FUNCTIONS:
- a. Prepare and publish test programs and schedules.
 - b. Provide test budget information to the Comptroller.
 - c. Monitor all CDC responsibilities regarding the CTP, DST EST, independent evaluation, ICTT, and other user field tests and experiments.
 - d. Provide staff coordination of all documents, plans, and reports for T&E SAL actions at HQCDC.
 - e. Prepare, publish, and maintain appropriate CDC T&E regulations, pamphlets, and guidance.

Figure 10

** See Appendix 18 to Annex D, Volume II for detailed TDA.

CHAPTER 6

ORGANIZATION OF HQCDC

6.1. GENERAL. One of the principal areas assigned to the study group was an examination of the size of CDC headquarters and identification of actions that can be taken to move toward a smaller headquarters with staff responsibilities only. The study examined the current structure of HQCDC and the objectives that had been established during the reorganization of 1971. Additional factors bearing on the possible size of the headquarters were identified, such as current DA personnel restrictions that will force CDC to reduce onboard civilian strength in the NCR and civilian personnel authorizations throughout the command by 30 June 1972. These reductions must be accomplished within the additional restriction of a reduction in average civilian grade throughout CDC by one-half a grade. To insure a balanced evaluation of the headquarters question, three alternatives were developed: (a) a large headquarters with minimum reduction to satisfy the personnel reductions, (b) a medium headquarters organized to carry out the concept of operations developed during the reorganization of 1971, and (c) a very small headquarters forced to rely on the group headquarters for staff actions for the command. More detailed analysis of these headquarters alternatives is at Appendix E. Findings, conclusions, and recommendations are provided below.

6.2. FINDINGS.

a. Present strength of CDC is summarized in Figure 11.

CDC PERSONNEL STATUS
(as of 7 Feb 72)

UNIT	AUTHORIZED	ASSIGNED	OVER/SHORT
HQCDC	568	637	+69
LN FO	40	35	- 5
DPFO	46	62	+16
COMS	808	815	+ 7
INCS	325	336	+11
PALS	461	469	+ 8
CONFOR	305	282	-23
SAG	139	134	- 5
SSI	31	33	+ 2
CDEC	2,846	2,688	-158
TOTAL	5,569	5,491	-78

Figure 11

b. The current CDC concept of operations envisioned a reduction in strength of the developmental staff during late FY 72 in order to provide the action groups with additional resources. The action groups must increase production and management capabilities in order to carry out their expanded responsibilities under the current "lead horse" concept of operations.

c. HQCDC continues to carry the largest overstrength in the command (See Figure 11).

d. HQCDC contains three operational or production type activities.

(1) OTE Teams (45 personnel in T&E Directorate).

(2) TOE Production Element (approximately 40 personnel) Organization Directorate.

(3) Intelligence and Threat Analysis (Intel and Threat Div, 19 authorized personnel) C&D Directorate.

e. As CGM's are produced, certain HQCDC staff functions are to be transferred to the program manager at the action group level.

f. To date there has been no transfer of HQCDC staff spaces or personnel to the action groups to manage the approved programs in Figure 12.

CDC APPROVED PROGRAMS		
CGM	TITLE	ACTION GROUP
1-72	Integrated Battlefield Control System	INCSG
2-72	Intelligence/STANO	INCSG
3-72	Tank/Antitank	COMSG
4-72	Communications-Electronics	INCSG
5-72	Airmobility	COMSG
6-72	Civil Disturbance/Emergency Operations	COMSG

Figure 12

g. The approval of the CGMs could have been accompanied by the transfer of the staff spaces indicated in Figure 13. These spaces represent a proportion of the manpower formerly required within the headquarters to perform staff functions which have been transferred to the groups by approved CGM. This manpower is not concentrated in one individual, but orderly transition to the "lead horse" concept requires that the action groups be augmented to perform the increased workload being assigned.

PROPOSED TRANSFER OF HQCDC SPACES TO GROUPS

CGM	POSSIBLE SPACES	SOURCE		GAINING GROUP
		C&D	MS	
1-72	1		1	INCSG
2-72	2	1	1	INCSG
3-72	2	1	1	COMSG
4-72	2	1	1	INCSG
5-72	3	1	2	COMSG
6-72	1	1		COMSG
TOTAL	11	5	6	

Figure 13

h. Recent directives from DA have directed that the onboard CDC civilian strength in the Washington, D. C. area must be reduced by 59 personnel to 440 by 30 June 1972. This is based on a 2.5 percent cut from the onboard strength of 30 November 1971, and effectively precludes the fill of the headquarters' OTE spaces (24) that were vacant as of that date.

i. A significant draw down of HQCDC could provide sufficient spaces in the NCR to bring an austere COMSG headquarters element near HQCDC enabling the further streamlining of HQCDC.

j. Detailed planning for Phase II reorganization has not progressed far enough to analyze the distribution of functions within a medium headquarters, and between this headquarters and the groups. Alternative II discussed in Annex E was developed on the basis of assumptions and general guidance being considered by the staff involved in preliminary reorganization planning.

6.3. CONCLUSIONS.

- a. Operational or production type activities (paragraph 2.d.) should be located outside HQCDC, but additional planning is necessary to insure continuity of operations during the transfer.
- b. Overstrength condition of HQCDC should be eliminated.
- c. Selected HQCDC staff positions should be transferred to the action groups as functions are transferred in each approved CGM. This will provide for an orderly phasedown of HQCDC.
- d. Provisions of the Phase II HQCDC Reorganization should be carried out if the current concept of operations is to remain valid.
- e. Detailed planning for Phase II reorganization will be required to develop the internal headquarters structure and insure continuity of operations during the transition period.

6.4. RECOMMENDATIONS.

- a. Phase I reorganization actions be completed.
- b. Detailed plans be developed for the Phase II reorganization of HQCDC.
- c. Test Support Cells from T&E Directorate be relocated as recommended in Chapter 5, out of the headquarters and out of the NCR.
- d. Planning currently underway to transfer the Intelligence and Threat Analysis function from Concepts and Doctrine Directorate to CONFOR Group be expanded to include transfer of personnel authorizations. The actual transfer of the function and personnel should take place in FY 73 as part of the Phase II HQCDC reorganization.
- e. A detailed plan be developed by the Director of Organization in coordination with the Comptroller and the Director of Personnel to establish an Organization Field Office (OFO) from the current mission, functions and resources of the Organization Directorate. OFO will perform the centralized and automated production of organization documents now being performed in the Organization Directorate. Planning, scheduling, and development of operational guidance for organization actions (BOIP, TOE, MACRIT, MOS, and QQPRI) will remain within the headquarters, in a staff element organized to facilitate transfer to DCSOPS control during Phase II reorganization. The target strength for the organization staff management element in HQCDC should be not more than 10 personnel with the desired goal being 8 personnel.
- f. HQCDC ORSA assets be reduced IAW Chapter 3 and 5.

g. Eleven staff spaces be identified within MS and C&D Directorate, and transferred to INCSG and COMSG IAW Figure 13 to support the implementation of the six approved CGM' s.

h. Additional staff spaces be transferred to the proponent action group on a phased basis to insure smooth, orderly transition to the Phase II headquarters structure.

i. HQCDC absorb the majority of the civilian space reduction in the NCR.

CHAPTER 7

IMPLEMENTATION

7.1. General - Implementation of the recommendations contained in this study will be initiated on approval of the study by the CG, USACDC.

7.1.1. Phases - Implementation will be by phases based on:

- a. Urgency of certain events and actions.
- b. Required regulatory lead time for certain personnel actions.
- c. Risks or penalties associated with delay.

7.1.2. Space Reductions - Guidance from DA regarding the maximum number of civilian spaces permitted in CDC in the National Capital Region (NCR) by 30 June 72 was received on 26 Jan 72. This imposed a strict constraint on alternatives being considered and places some urgency on actions designed to transfer personnel authorizations away from the NCR. On 6 March 72, CDC received a DA directive to freeze all hires in the Washington National Capital Region. Spaces in this region must either be used to reach the lowered limit or be transferred away from the NCR. Alternatives would be the RIF of employees now assigned in the NCR.

7.1.3 a. Impact - Implementation of the recommendations contained in this study, including those separate organizational actions discussed in Chapter 6, will assist in reducing the size of CDC HQ, reducing the civilian strength in the NCR and removing operational functions from the headquarters. The recommendations do not completely achieve the goals of Phase II reorganization, but they do facilitate careful progress toward the goals of Phase II by reducing the size of HQ CDC and increasing the role of the groups as program managers.

b. The impact of recommendations changing CDC personnel authorizations contained in this study are shown in Figure 13.

7.1.4. Implementation - Study recommendations are contained in Chapters 2-6 for each of the areas examined. Implementation of the recommendations is phased over three time periods:

- a. Immediate Action: Those actions that must be completed by 30 April 1972.
- b. FY 72 Actions: Those actions that must be completed by 30 June 1972.
- c. FY 73 Actions: Those actions that must be completed during FY73 as part of the Phase II reorganization of CDC.

7.2. Immediate Actions -

SUMMARY OF SATE STUDY PERSONNEL RECOMMENDATIONS - PHASE I
(Based on TDA Authorized Strengths)

Losing Element/Function	Gaining Element	Personnel				TOTAL
		Off	EM	Prov Civ	Cler Civ	
DCSOPS QAD-OR/SA SPT	SAG	1		3		4
C&D DIRECTORATE						
INCSG CGM Functions	INCSG	2				2
COMSG CGM Functions	COMSG	3				3
MS DIRCTORATE						
EST Programming	DCSOPS T&E DIV	2				2
INCSG CGM Functions	INCSG	3				3
COMSG CGM Functions	COMSG	3				3
PERMANENT DELETION						
DCSOPS QAD	None			2		2
T&E Directorate	None				3	3
T&E DIRECTORATE						
Test Support Cells	CDEC	23	8	10	4	45
INCSG OR/SA Spt	SAG T&E Div			1	1	2
COMSG OR/SA Spt	Leavenworth		1	7		8
	SAG Fld Ofc					
PALSG OR/SA Spt	Ft Lee			2		2
	SAG Fld Ofc					
ORLL/VCOD Programs	C&D Dir	1	1			2
COMSG T&E Functions	COMSG	5	1		1	7
INCSG T&E Functions	INCSG	3				3
PALSG T&E Functions	PALSG	3				3
Directorate (--)	DCSOPS T&E Div	20	2	1	6	29
HQ CDC REDUCTION	All Above	46	10	25	9	90
NCR CDC REDUCTION	ALL ABOVE	37	10	21	8	76

Figure 14

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<u>Completion Date</u>	<u>Action</u>	<u>Action HQ, CDC Command</u>
10 Mar	Approve Recommendations of SATE Report	CG
31 Mar	DA life cycle management model updated	COMPT - HQ CDC
31 Mar	Joint CDC/AMC MOA on OTE completed	T&E - HQ CDC
31 Mar	Plan to educate the command on current organization and concept of operations completed	DCSOPS - HQ CDC
31 Mar	Command emphasis letter on use of OR/SA assets dispatched	DCSOPS - HQ CDC
17 Apr	Joint CDC/CONARC MOA on Test Support Cells completed	T&E - HQ CDC
17 Apr	Management Assistance to groups or program/systems management completed	COMPT - HQ CDC
17 Apr	Simplified life cycle process chart completed	COMPT - HQ CDC
17 Apr	Single T&E Reg published (Draft for Implementation)	T&E - HQ CDC
30 Apr	Detailed T&E implementing procedures published (draft for implementation)	T&E - HQ CDC
30 Apr	Action to transfer spaces identified for Phase I in Chapter 4-6 and summarized in Figure 14 completed	PERSONNEL - GROUPS
30 Apr	T&E Directorate transferred to DCSOPS as a T&E Div	DCSOPS
30 Apr	Staff responsibility for CTP, DST, EST, MPT, and MFT transferred to Dir, T&E with the Dir, T&E forming a new OTE Branch	DCSOPS - HQ CDC

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<u>Completion Date</u>	<u>Action</u>	<u>Action HQ, CDC Command</u>
30 Apr	ORLL/VCOD Program trans ferred to C&D Dir	DCSOPS - HQ CDC
7.3 FY 72 Actions -		
15 May	Current Concept of Operations (CDC Pam 10-3) be updated and published for FY 73.	DCSOPS - HQ CDC
15 May	Groups establish single points of contact for T&E	DCSOPS - Groups
15 May	Coordination with ACSFOR for an expanded TSRC completed	DCSOPS - HQ CDC
15 May	Approved single T&E Regulation published	DCSOPS (T&E)-HQ CDC
1 Jun	Detailed life cycle of the CD process developed	COMPT - HQ CDC
1 Jun	Approved T&E implementing procedures published	DCSOPS (T&E) - HQ CDC
1 Jun	MOAS between agencies and TECOM boards completed	DCSOPS - Groups
30 Jun	Personnel transfers/hires listed in Figure 14 completed	DCSMAR - Groups
30 Jun	Plans for Phase II reorganiza- tion completed	DCSMAR - HQ CDC
30 Jun	Plans for the establishment of an Organization Field Office completed	DIR ORG - HQ CDC
30 Jun	Methodology for developing coordinated evaluation plans completed	DCSOPS - SAG
7.4 FY 73 Actions		
30 Jul 72	CDC Evaluation Center established at Ft Leavenworth	DCSOPS - SAG, COMS
30 Jul 72	Request for an experimental operation/MIS subsystem forwarded to DA	DMIS - HQ CDC

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Completion Date	Action	Action HQ, CDC Command
30 Jul 72	Actions initiated for Phase II Reorganization	DCSMAR - HQ CDC
30 Sep 72	Analysis completed of the OPCON status of the SAG Leavenworth Field Office	DCSOPS - HQ CDC
14 Oct 72	Status of SAG Ft Lee Office determined	DCSOPS - HQ CDC
31 Dec 72	Phase II reorganization actions completed	DCSMAR - HQ CDC